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Lewis A. Jones and John G. Sutton, District Engineer, Milwaukee, Wisconsin, conducted two conferences of CCC superintendents and engineers during the month of August. The conference with the Indiana personnel was held at Purdue University, Lafayette, Indiana, the University Extension Division cooperating. The Ohio conference was held at the Sand Beach side camp of the Bowling Green, Ohio, CCC camp, the Extension Division of the Ohio State University cooperating. Both of these meetings were attended by representatives of state cooperating agencies, U. S. Army, and educational advisors of the CCC. The general policies of the CCC organization were discussed as well as the technical phases of the drainage camp work.

Central District drainage camps, during the month of July, 1938, completed 3,959,029 square yards of clearing, 1,542,240 cubic yards of excavation and embankment, 40,434 lineal feet of tile reconditioning, structural and other work, with the use of 76,032 enrollee man-days on the work; 17,275 enrollee man-days were used on structures and other miscellaneous work in addition to that reported above.

A topographic survey of approximately 320 acres of land in eastern North Carolina on which it is proposed to construct a supplemental surface irrigation system is being made by J. R. Cowand. The owners intend to devote this land to growing truck crops. The preliminary reports indicate that the land slopes are reasonably favorable but it may not be easy to secure a sufficient supply of suitable water.

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At the Water Conservation Conference held at Salt Lake City, Utah, July 19, under the auspices of the Utah Section, American Society of Civil Engineers, Harry F. Blaney, as Chairman of the A.S.C.E. Irrigation Division Committee on Conservation of Water, presented a paper on the objectives and activities of that committee, also a report of its accomplishments. A. T. Mitchelson presented a paper on "Conservation of Water by Recharge of the Underground Supply".

J. C. Marr inspected work being carried on by the Bureau in cooperation with the Idaho Agricultural Experiment Station to determine

the effect of pumping from wells on ground water level, and ascertaining the efficiency with which the water is pumped. A system of observation wells was installed for this purpose and the depth of water in them was measured at regular intervals. At present a line of levels tying in all of these observation wells is being run. Several of the pumping plants, of which there are approximately 12, are being tested each week for efficiency.

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Observations made by R. A. Work of pear tree transpiration during an extended period of above-normal temperatures at Medford, Ore., (with daily maxima ranging from 100° to 107.3° F.) indicated an extraordinarily high rate of transpiration. Measurements of fruit temperatures showed that fruit on dry trees, which had been shaded for two hours before measurement, averaged at the core nearly 9° F. warmer than fruits on well irrigated trees. Some fruits on dry trees had core temperatures of 117° (air temperature 104°). Severe sun-burning of Anjou pears occurred throughout the week, even on well irrigated plots. The warm weather practically checked all blight movement but accentuated spider mite injury, which appeared more serious in the alfalfa plots than in the clean-cultivated plots. A combination of oil and lead was used as a spray for spider mite and second brood codlin moth.

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Carl Rohwer surveyed the site for the dam to be constructed on the Southern Great Plains Experiment Station of the Bureau of Plant Industry, at Woodward, Okla. He also inspected the work of stripping the site, excavating the cutoff trench and building sheet-piling. Levels were run for setting slope stakes, and additional levels for determining the amount of material removed in the stripping of the site.

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Harry F. Blaney, Colin A. Taylor, and Dean W. Bloodgood, in company with officials of the Los Angeles Water Department, visited the San Fernando Valley, Calif., for the purpose of inspecting sites for proposed duty of water investigations to be carried on by the Bureau in cooperation with the Los Angeles Water Department. It was decided that Mr. Taylor would supervise experiments on use of water by citrus, Mr. Bloodgood the experiments on field, vegetable, and miscellaneous crops, while Mr. Blaney will have general supervision of the entire project.

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Several orchards in the vicinity of Glendora, Fullerton, and Covina, Calif., were furrowed by the furrowing machine for laying out broad, shallow irrigation furrows in citrus and walnut orchards, in tests conducted by Colin A. Taylor. Irrigators have found it much easier to handle the water on fairly flat grades by the use of broad furrows. Some experiments are being carried on to adapt this type of furrow to hill land. After the practical matter of making the broad furrows under a variety of orchard conditions has been worked out, it is planned to make a series of absorption and penetration tests on various soil types.

Harry G. Nickle attended a meeting called by Gov. Allred of Texas at the request of the State Planning Board to discuss the need for administrative control of ground water in that State. About 200 representatives of all parts of the State were in attendance and many spoke in favor of control of underground waters. The chairman of the meeting was empowered to name a committee of seven members from all portions of the State to work with the Water Resources Committee of the State Planning Board and the Watersheds Association in the drafting of proper legislation and in furthering its passage at the next meeting of the Legislature.

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According to R. L. Parshall tests are now being made of the use of cotton fabric treated with special tar oils for lining irrigation ditches to prevent seepage. It is planned to provide a model lined ditch section for the purpose of showing the method of preparation of the ditch surface and application of the tar and cotton fabric. The model will be about 6 feet long and 3 feet wide, and will weigh possibly 300 pounds. It will be on exhibit at the Fort Collins, Colo. hydraulics laboratory.

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Colin A. Taylor and John O. Reeve are conducting some tests in North Pomona, Calif., based on the discovery made by Dr. Wendt of the California Institute of Technology, that Vitamin B1 is helpful in starting small plants. One of the problems with the older citrus orchards is that of starting new trees when occasional replanting is necessary, as the young trees are often wilted badly because their roots are not well enough established to carry through a regular irrigation interval. The experiments referred to are being made on seedling and year-old orange trees, which were treated with a B1 solution before planting.

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M. R. Lewis and Dean C. Muckel continued the investigation of irrigation possibilities in North and South Dakota, including inspection of dams and spillways recently constructed by Government and other agencies. Mr. Lewis was impressed with the improvement in the quality of the work being done on W.P.A. dams in South Dakota as compared with that done prior to 1937. Many individual farms were visited and the possibilities of irrigation studied. During the last week of July, Leslie Bowen joined Mr. Lewis in a trip through the Dakotas in order to become familiar with the work in that section before Mr. Lewis returned to his headquarters at Corvallis, Oregon. In comparing present agricultural conditions resulting from above-normal precipitation during the past several months with conditions as they existed during 1934-1936 Mr. Bowen found that nature has gone a considerable way in healing the scars inflicted by the drought, and that a few more rains will complete the task as far as the northern Great Plains are concerned.

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R. B. Gray returned to Washington August 12 after an extended trip through the South and Middle West. At Auburn, Ala. he discussed future plans for the cotton production machinery project with Dean Funchess of the Alabama station and R. M. Merrill now the Bureau engineer in charge there. Mr. Gray then proceeded to Louisiana where, in company with E. Gregson Brown of the Drainage Division, he discussed with other Department of Agriculture representatives and a number of sugar cane growers urgent problems needing attention, including windrowers and harvesters.

The matter was also discussed at Baton Rouge with members of the Louisiana Agricultural College Station staff and in New Orleans with officials of the American Sugar Cane League.

He then stopped at the Alcohol Plant at Atchison, Kans., and discussed with various officials points relative to the manufacture and use of alcohol blended motor fuels (Agrol). Several thousand stations are now selling this fuel and at Atchison, Agrol 10 sells for 1 cent less per gallon than premium gasoline. At present grain sorghums hold considerable promise as the raw material although grade 2 corn and a poor grade of wheat have been used the past year. The proposed new plant at Sioux City, Iowa, is still under consideration.

Mr. Gray called at Ames and discussed the Corn Production Machinery Project with Dr. Davidson and C. K. Shedd. In Chicago one farm machinery manufacturer contacted stated that 50 of the self-aligning disk jointers of the type developed at Toledo are in the field for observation during fall plowing.

At Toledo the observations made by Mr. Irons in the West relative to mechanical grasshopper control, were discussed. Corn borer damage appears to be getting serious especially in sweet corn. Some fields near Toledo inspected by the entomologists had as high as 800 borers per 100 stalks in 1937 and over 1700 per hundred stalks this year. The two-generation borer is also much in evidence in this region as is also the three-generation borer in some locations in the eastern infestation. In the western infestation the indications are that the intensity will be at least as heavy as 1927 when the clean-up campaign was staged.

E. M. Dieffenbach in charge of the weed control machinery project and Dr. R. J. Evans, State Agronomist for Utah, recently made a trip together through the Uintah Basin in eastern Utah, and into Carbon and Emery counties in Utah. Numerous plots were visited which were being cultivated at regular intervals for weed control. The chief weeds being fought in the counties visited were wild morning glory (*Convolvulus arvensis*) and white top (*Lepidium draba*).

The work on the cooperative sugar beet production machinery project at Davis, Calif., is being extended with the funds donated for this project to the University of California by the U. S. Beet Sugar Association. Mr. McBirney reports that the work at Davis, as heretofore, will be carried on cooperatively between the Division of Mechanical Equipment of the Bureau of Agricultural Engineering and the Division of Agricultural Engineering of the University of California, and will be jointly directed by S. W. McBirney of our Bureau and Roy Bainer of the University of California. The Agricultural Engineering Division of the University has added to its staff Col. O. B. Zimmerman as Research Associate, John B. Powers as Research Assistant, Fred Lory, Jr., as Machinist and Percy E. Symens as Mechanic's Assistant, who will devote their entire time to the project. Mechanical harvesting will receive chief attention at present, though the ultimate aim will be the reduction of both spring and fall labor peaks of sugar beet production.

In connection with the establishment of four regional laboratories for the study of the utilization of farm products the Bureau has been requested to furnish a list of such projects now in progress. Messrs. Cumings (Chairman), Jones, Ashby and Gray constitute a Bureau committee the function of which is to supply a special survey committee of the Department with information on active and proposed research projects in the field of agricultural engineering and bearing on the utilization and new uses of farm products.

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W. H. Redit assisted in the transplanting operations of a co-operative fertilizer-placement experiment with cauliflower on August 3 at the Long island Vegetable Research Farm, Riverhead, New York. One of the primary objects of the study is to compare the placement of fertilizer in a band at each side of the row with the common farm practice of broadcasting the fertilizer.

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E. D. Gordon reports that during the past month the laboratory has been visited by several groups. The 4H Club boys who were in Auburn for their summer gathering came over in groups of about 50 on two different days. During Farmer's Week the work that is being done at Auburn was explained and a demonstration of the equipment in operation was made to about 100 farmers. On August 9 about 125 agronomists and soil specialists of the Southeast section stopped for a brief visit at the tillage laboratory which was part of the tour they were making of experiment station projects.

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A new type of wheat-drying machine, employing steam heat and counterflow principles, is being tested with promising results by George Burkhardt at College Park, Maryland.

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A. D. Edgar visited points in the potato growing sections of North Dakota with Myron G. Cropsey to plan storage investigations for that region.

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Wallace Ashby is at Ames, Iowa, to confer with Professor J. B. Davidson, Dr. Barre and others, in starting a new corn storage project under Bankhead-Jones funds, which was recently approved.

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